

Amendments to the Claims

The listing of claims will replace the previous version, and the listing of claims:

Listing of Claims

1. (currently amended) A production method of an oxynitride powder, comprising ~~characterized in that the method comprises~~ the step of:

applying a heat treatment in a reducing and nitriding atmosphere, to a precursor compound including at least constituent elements M, Si, Al, and O (where M is one element or mixed two or more elements selected from Li, Mg, Ca, Sr, Y, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu), thereby decreasing an oxygen content and increasing a nitrogen content of the precursor,

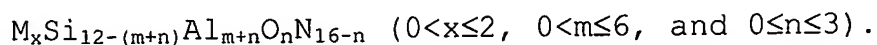
wherein the precursor compound is a mixture of: a compound SiX which turns into silicon dioxide, silicon oxynitride, or silicon nitride, by heating; a compound MX which turns into oxide, oxynitride, or nitride of M by heating; and a compound AlX which turns into aluminum oxide, aluminum oxynitride, or aluminum nitride, by heating, and

wherein the SiX has an averaged particle size of 2 μ m or less.

2. (currently amended) The production method of an oxynitride powder of claim 1, wherein ~~characterized in that~~ the precursor compound includes nitrogen (N) therein.

3. (currently amended) The production method of an oxynitride powder of claim 1, wherein ~~characterized in that~~ the method further comprises the step of:

applying a heat treatment in a reducing and nitriding atmosphere, to the precursor compound, thereby decreasing an oxygen content and increasing a nitrogen content of the precursor, to produce an α -sialon represented by a general formula



4. (canceled)

5. (currently amended) The production method of an oxynitride powder of claim 1 ~~claim 4~~, wherein ~~characterized in that~~ the SiX is one compound or mixed two or more compounds selected from silicon dioxide (SiO_2), silicon oxynitride (Si_2N_2O), and silicon nitride (Si_3N_4).

6. (currently amended) The production method of an oxynitride powder of claim 1 ~~claim 4~~, wherein ~~characterized in that~~ the MX is one compound or mixed two or more compounds selected from oxide, hydroxide, alkoxide, carbonate, nitrate, and chloride, of M.

7. (currently amended) The production method of an oxynitride powder of claim 1 ~~claim 4~~, wherein ~~characterized in that~~ the AlX is one compound or mixed two or more compounds selected from oxide, hydroxide, alkoxide, carbonate, nitrate, and chloride, of aluminum.

8. (currently amended) The A production method of an oxynitride powder, comprising the step of:

applying a heat treatment in a reducing and nitriding atmosphere, to a precursor compound including at least constituent elements M, Si, Al, and O (where M is one element or mixed two or more elements selected from Li, Mg, Ca, Sr, Y, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu), thereby decreasing an oxygen content and increasing a nitrogen content of the precursor,

wherein the precursor compound is a mixture of: a compound SiX which turns into silicon dioxide, silicon oxynitride, or silicon nitride, by heating; a compound MX which turns into oxide, oxynitride, or nitride of M by heating; and a compound AlX which turns into aluminum oxide, aluminum oxynitride, or aluminum nitride, by heating ~~of claim 4, and~~

~~wherein characterized in that~~ MX particles and AlX particles have averaged particle sizes smaller than that of SiX particles, respectively.

9. (canceled)

10. (currently amended) The production method of an oxynitride powder of claim 1 ~~claim 4~~, wherein characterized in that the MX and AlX are attached to a surface of the SiX.

11. (currently amended) The production method of an oxynitride powder of claim 1 ~~claim 4~~, wherein characterized in that the precursor compound is a mixture obtained by dispersing SiX

particles in a solution including the MX and AlX dissolved therein followed by drying and desolvation, the mixture being in a form where compounds of the M and Al are attached to a surface of a SiX particle.

12. (currently amended) The A production method of an oxynitride powder, comprising the step of:

applying a heat treatment in a reducing and nitriding atmosphere, to a precursor compound including at least constituent elements M, Si, Al, and O (where M is one element or mixed two or more elements selected from Li, Mg, Ca, Sr, Y, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, and Lu), thereby decreasing an oxygen content and increasing a nitrogen content of the precursor,

wherein the precursor compound is a mixture of: a compound SiX which turns into silicon dioxide, silicon oxynitride, or silicon nitride, by heating; a compound MX which turns into oxide, oxynitride, or nitride of M by heating; and a compound AlX which turns into aluminum oxide, aluminum oxynitride, or aluminum nitride, by heating, and

wherein ~~of claim 4, characterized in that~~ the precursor compound is a complex citrate obtained by dispersing the SiX in an aqueous solution including the MX and AlX dissolved therein, followed by addition of citric acid and by drying and dehydration.

13. (currently amended) The production method of an oxynitride powder of claim 1 ~~claim 4, wherein characterized in that~~ the precursor compound is a compound obtained by applying a heat

treatment to a complex citrate to thereby decompose and eliminate citric acid therefrom, the complex citrate being obtained by dispersing the SiX in an aqueous solution including the MX and AlX dissolved therein, followed by addition of citric acid and by drying and dehydration.

14. (currently amended) The production method of an oxynitride powder of claim 1, wherein ~~characterized in that~~ the reducing and nitriding atmosphere includes at least an ammonia gas.

15. (currently amended) The production method of an oxynitride powder of claim 1, wherein ~~characterized in that~~ the reducing and nitriding atmosphere is a mixed gas atmosphere of ammonia and hydrocarbon gas.

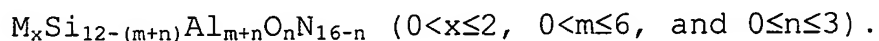
16. (currently amended) The production method of an oxynitride powder of claim 15, wherein ~~characterized in that~~ the hydrocarbon gas is a methane or propane gas.

17. (currently amended) The production method of an oxynitride powder of claim 1, wherein ~~characterized in that~~ the M includes at least Ca.

18. (currently amended) The production method of an oxynitride powder of claim 1, wherein ~~characterized in that~~ the M includes at least Eu.

19. (currently amended) The production method of an oxynitride powder of claim 1, ~~characterized in that the method further comprising~~ comprises the step of:

adding, into the precursor compound, one reaction accelerator or mixed two or more reaction accelerators selected from fluoride, chloride, sulfate, phosphate, and borate of an element selected from calcium, potassium, and aluminum, followed by a heat treatment in a reducing and nitriding atmosphere, thereby decreasing an oxygen content and increasing a nitrogen content of the precursor, to produce an α -sialon represented by a general formula



20. (currently amended) An oxynitride powder, wherein ~~characterized in that~~ the oxynitride powder is an α -sialon powder produced by the method of claim 1, and

~~that~~ the α -sialon powder is represented by $Ca_{x_1}Eu_{x_2}Si_{12-(m+n)}Al_{m+n}O_nN_{16-n}$ while fully satisfying conditions of:

$$0.4 \leq x_1 \leq 1.5,$$

$$0.01 \leq x_2 \leq 0.4,$$

$$0.8 \leq m \leq 3, \text{ and}$$

$$0 \leq n \leq 2.$$